

VIRGINIA WILDLIFE

NOVEMBER 1995

ONE DOLLAR





Director's Column

William L. Woodfin, Jr



General firearms season opens on the 20th of this month, just a few days before Thanksgiving.

Arguably the most American of holidays—some would say it even began right here in Virginia—Thanksgiving is a good time to give thanks for, and to think about, the abundance of outdoor opportunities Virginia provides.

If you want to find wildlife to watch, or if you want to hunt game, Virginia offers some of the best opportunities. We now have some of the highest numbers of big game ever seen in the Commonwealth. For instance, Virginia's deer herd has grown dramatically in recent decades; the herd numbered 150,000 in the early 1950's, and it grew to 425,000 by 1980 but it's now estimated conservatively at 900,000. That's more than twice as many white-tailed deer estimated to have been in the Common-

wealth in 1607 when Jamestown was founded.

We can be thankful for all those deer—Virginia's most popular game species—as well as for the cooperation of landowners and sportsmen who commit time and resources to sound wildlife management planning. They are doing their part to make that high number of deer possible.

And we cannot forget the bonds of friendship formed on hunting trips. Many hunters we know will be hunting during the first week of general firearms season, with the buddies they hunted with years ago as youngsters. Some will even hunt on Thanksgiving Thursday, and leave the traditional holiday meal until Sunday.

Hunters, successful or not, as well as wildlife watchers, know that time in the outdoors has a wonderful clarifying effect on the mind. We can be thankful that in Virginia great scenery abounds, and there are always interesting sights to enjoy. Vigorous days out hiking in the fresh

Thoughts on Thanksgiving

air while looking for game usually prove to be one of the most rewarding activities of the year.

We can also be thankful for the times when our favorite recreational opportunities coincide with helping those less fortunate. As many hunters already know, a group called Hunters for the Hungry processes and distributes venison across the state, but for the program to advance it needs your support. Hunters for the Hungry has distributed addressed envelopes to VDGIF license agents, which has made it easier to contribute to the cause of feeding the needy. You can also contact Hunters for the Hungry at is Virginia Hunters Who Care, P.O. Box 304, Big Island, Virginia, 24526. It's a great way to show your community spirit as a hunter.

Not everyone has the same hunting opportunities, but for the most part, today in Virginia, the "good old days" are right now. I sincerely hope you have a successful and safe hunting season. □



Bill Lea

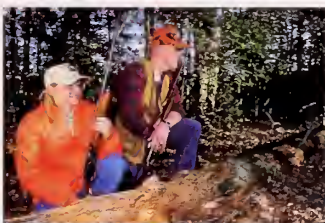
VIRGINIA WILDLIFE



Staff photo
page 4



© Dwight Dyke
page 18



© Dwight Dyke
page 26

Cover: Whitetail fawn, photo by Bill Lea.

Back cover: photo by Dwight Dyke ©.

Features

- 5 The Past by VDGIF Staff
Habitat is best when well managed.

- 11 Home Sweet Home by Pat Keyser
An overview of the Virginia deer resource since frontier times.

- 18 Where We Are ... and Where We're Going by VDGIF Staff
The value of check stations, DMAP and DCAP.

- 26 Hunters for the Hungry
How the deer resource helps feed the needy in Virginia.

November Journal

28 News

30 Habitat

31 Boating Safety

32 Recipes

Dedicated to the Conservation of Virginia's Wildlife and Natural Resources



“Golf is sophisticated exercise, but the love of hunting is almost a physiological characteristic. A man may not care for golf and still be human, but the man who does not like to see, hunt, photograph, or otherwise outwit birds or animals is hardly normal. He is supercivilized, and I for one do not know how to deal with him. Babes do not tremble when they are shown a golf ball, but I should not like to own the boy whose hair does not lift his hat when he sees his first deer. We are dealing, therefore, with something that lies very deep.”

*Aldo Leopold
A Sand County Almanac*



Bill Lea



The Past

White-tailed deer management: where we've been

Deer herds were plentiful and widespread in the early 1600's when the English came to Jamestown, but during the next 300 years Virginia's deer herd decreased to unacceptable levels. However, modern wildlife management methods and restoration programs which began taking shape in the early 1900's have made the difference, and now Virginia boasts record deer densities across the Commonwealth. Exploring the data available from earlier times and the

impressive growth of Virginia's white-tailed deer in this century will offer insights into the management demands today and tomorrow.

Early Resource Use

When the first European settlers arrived in North America at Jamestown Island, Virginia, in 1607, they discovered an animal that would become commonly known as the Virginia white-tailed deer.

Early records indicate that white-tailed deer were found in abundance statewide, with the highest population densities apparently located in coastal Tidewater. One of America's foremost naturalists, Ernest Thompson Seton, estimated in 1909 that the deer herd in the eastern United States at the time of European settlement was ten deer per square mile. That would mean that Virginia's precolonial deer population would have been about 400,000 deer.

Seton's figuring is supported by more recent research. Scientists who developed a mathematical model based on North America's estimated Indian population and several other factors arrive at a precolonial white-tailed deer population estimate of 7.9 to 10.9 deer per square mile. For Virginia, this would mean a herd in the early 1600's numbering between 313,000 and 433,000 deer, or an average of 373,000. These two independent figures lend credibility to the estimated 400,000.

Despite the fact that today's herd is conservatively estimated to be more than twice as large, herd densities did not steadily increase from those days into the present. With today's herd numbering more than 900,000, it is hard to imagine that Virginia's deer numbers declined in the 1600's. Frequently cited as probable causes are habitat loss, overharvest, lack of effective management practices and enforcement of game laws. Of these generic causes, a continuous, extensive unmanaged harvest would appear to have been the most damaging. Theoretically, initial small-scale clearing of forests and land use conversion from forest to agriculture should have benefited Virginia's early colonial deer herd, but this was not the case, and Virginia responded.

In 1699, Virginia was one of the first colonies to set a closed season for hunting deer from February 1 through July 31. The fine for violating the 1699 law was 500 pounds of tobacco. In an effort to improve en-

"I have but one lamp by which my feet are guided, and that is the lamp of experience. I know of no way of judging the future but by the past."

—Patrick Henry



forcement of the closed season law, an amendment was made in 1705 providing for the payment of half the fine to anyone acting as an informant.

However, as in our day, crafting wildlife management policies was not as simple as it might seem. Since venison and deer hides were staples of everyday colonial life, nearly every law passed to protect deer in Virginia contained an exemption for settlers living on the western frontier. Even so, by 1738, separate seasons had been established for bucks versus does and fawns, and fines had been converted to 20 shillings. If the fine was not paid within six months the offender received 20 lashes. Evidence of the pioneer dependence on the deer resource for food and clothing can be observed in the fact that it was not until 1849 that those counties west of the Blue Ridge had a closed season on deer.

Subsistence hunting was followed by a commercial trade in deer hides which peaked around 1700. For the years 1698 through 1715, historical records indicate that approximately 14,000 Virginia deer hides were exported annually to Europe. The commercial trade in deer hides was followed by market hunting. In an article that appeared in *Virginia Wildlife* in 1955 that covered wildlife conditions around 1900, James Thornton recounted that one market hunter in northwestern Virginia was reported to have killed more than 2,700 deer prior to 1860 for an average price of 10 cents per pound.

Market hunting was effectively outlawed with the passage of the Lacey Act in 1900, a federal law against the buying and selling of wildlife. The act also gave the federal government regulatory authority over the interstate transport of wildlife.

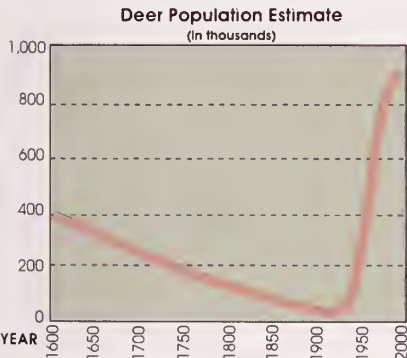
This century: management brings recovery

As in most other southeastern states, Virginia's deer herd reached its lowest point during the early 1900's. By that time the deer herd in nearly all of Virginia's western mountain and Piedmont was gone, and the situation did not improve rapidly. In an article that appeared in the predecessor to *Virginia Wildlife, Game and Fish Conservationist*, James Robertson, in 1931, estimated the statewide deer population at fewer than 25,000.

Fortunately, white-tailed deer are resilient and have responded to scientifically sound management. One noted authority has suggested that deer numbers did not rebound sig-

nificantly in North America until the 1930's. The major factors credited with the significant increase in population during the past several decades are reforestation, land use changes, protective game laws, effective law enforcement, and restoration efforts. The latter three factors have been and continue to be the responsibility of the Virginia Department of Game and Inland Fisheries.

The Game Commission, later to become the Virginia Department of Game and Inland Fisheries (VDGIF) was formed in 1916. A considerable amount of the new agency's resources were spent on white-tailed deer management. In efforts to foster deer herds, attempts were made to shorten seasons and establish bag limits. Annual deer harvests during the 1920's averaged only 619 deer for the 33 counties that had open deer seasons. In response to conservationist pressure in 1924, a 45-day, buck-only deer season was set between November 15th and December 31st with a bag limit of one per day, two per season.



Current deer densities are the result of population growth over the last 70 years.

In 1926, the Commission initiated a deer restoration program. Early records of this restoration effort are incomplete, but during 1926-1951, 1,305 deer were imported into Virginia from out-of-state sources. Virginia has received deer from 11 other states, more than any other state in the Southeast. The average cost of out-of-state deer was \$50 apiece, with costs ranging from \$25 to \$125. The last deer was imported into Virginia in 1951. Passage in 1937 of the

Federal Aid in Wildlife Restoration program, commonly known as the Pittman-Robertson Act, meant that an existing excise tax on sporting arms and ammunition for wildlife conservation and restoration would now provide crucial funds and manpower for Virginia's deer restoration program. It should be noted that the House sponsor of the bill, Representative A. Willis Robertson, was a native Virginian who at the time served as Chairman of the House Select Committee on Conservation of Wildlife Resources. Prior to his congressional career, Robertson had served as chairman of the Game Commission and would later be elected U.S. Senator.



After a slow start, early deer restoration efforts peaked at 375 in 1940. With the exception of several western Piedmont counties that border the Blue Ridge, nearly all restocking in Virginia was done west of the Blue Ridge Mountains. In all, more than 4,200 deer were released during Virginia's deer restoration efforts. In 1952, the Virginia Game Commission initiated a statewide deer investigation program to collect all available deer data for setting seasons and bag limits. In 1954, a full-time deer biologist was employed to direct this program. Changes in deer densities and distribution patterns since 1950 are best demonstrated in a series of maps



Effective enforcement of protective game laws by professional game wardens, major habitat and land use changes, and intensive Department restoration efforts set the stage for the recovery of Virginia's deer herd experienced over the past 70 years. Photos by staff.

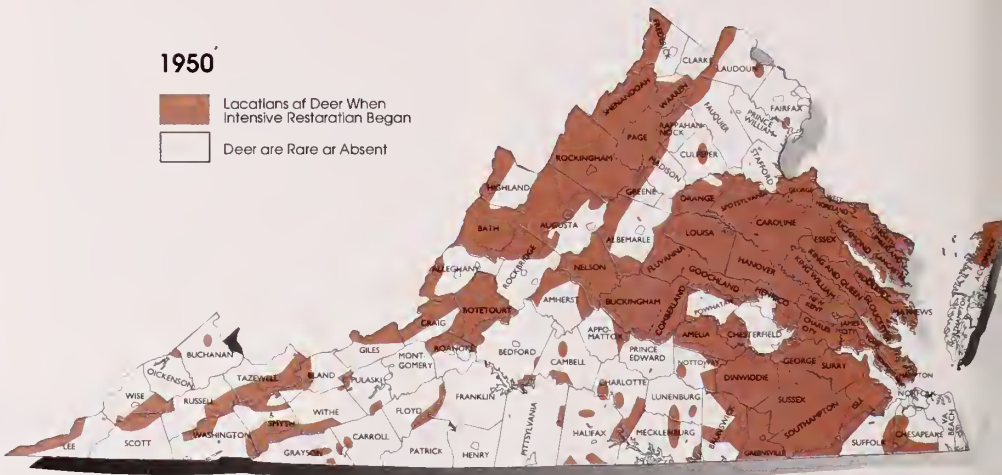
produced by the Southeastern Cooperative Wildlife Disease Study (SCWDS), based out of the University of Georgia. The maps were prepared from data compiled by state game and fish biologists. SCWDS has produced a series of three maps which document the changes in deer distribution and relative abundance for the Southeastern United States in 1950, 1970, and 1980, as well as one documenting data for the entire United States in 1988.

The good news in 1950 was that Virginia had one of the more extensive southeastern deer herds. There was nearly complete coverage of the coastal Tidewater region, and Tidewater herds had extended into the central Piedmont region. The southern and northern Piedmont remained unoccupied. West of the

Virginia's deer distribution in 1950, 1970, and 1980.

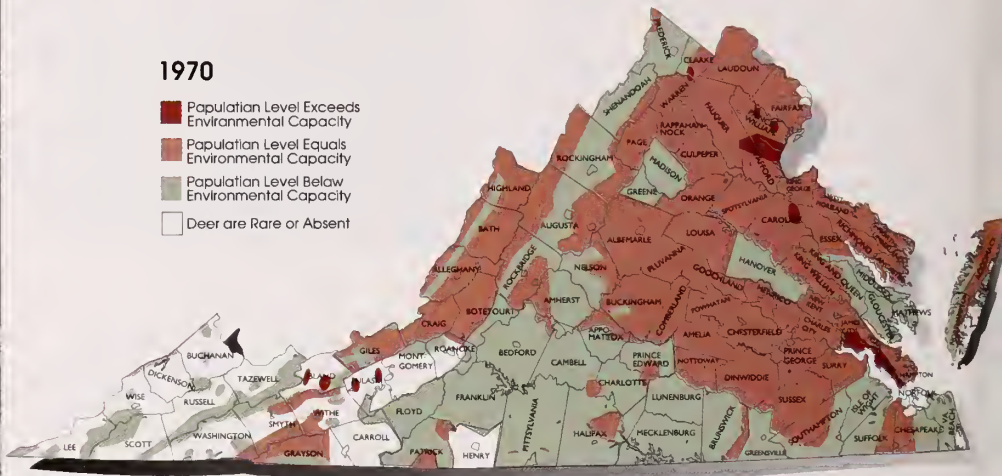
1950

- Locations of Deer When Intensive Restoration Began
- Deer are Rare or Absent



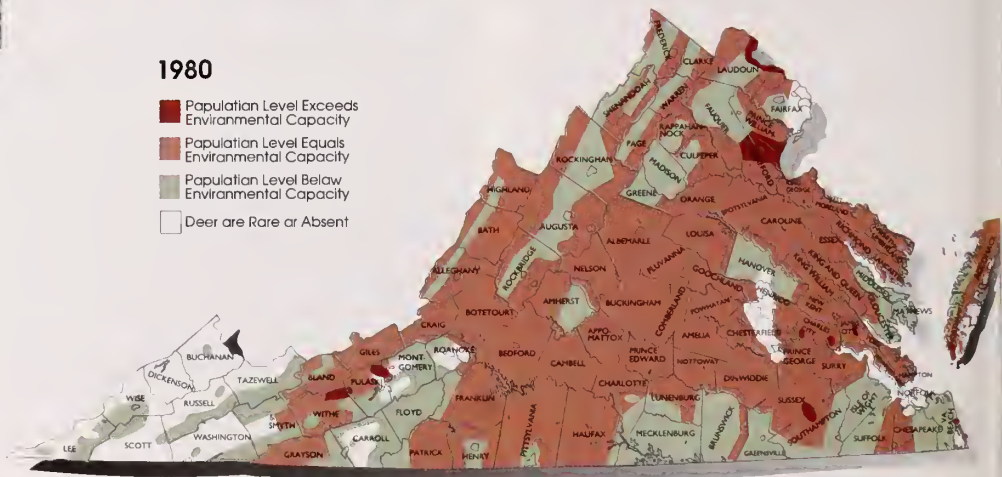
1970

- Population Level Exceeds Environmental Capacity
- Population Level Equals Environmental Capacity
- Population Level Below Environmental Capacity
- Deer are Rare or Absent



1980

- Population Level Exceeds Environmental Capacity
- Population Level Equals Environmental Capacity
- Population Level Below Environmental Capacity
- Deer are Rare or Absent



Above: Regulated deer harvests have been an important component of the Department's deer management programs since its inception in 1916. Staff photo.

Right: Maps were reprinted with the permission of the Southeastern Cooperative Wildlife Disease Study. Graphics by Pels.

Blue Ridge, the 1950 SCWDS map indicates native and restocked deer herds of northwestern Virginia had filled approximately 75 percent of the available range. Deer herds in the southern mountains were still delineated as restocked, isolated groups. During the early 1950's Vir-

ginia's deer herd population was estimated to have increased to approximately 150,000.

The 1970 SCWDS deer map documents significant increases in the distribution and abundance of deer in Virginia. By 1970, Virginia's deer herd population was estimated to have increased to just more than 200,000. The northern and southern Piedmont, which lacked deer in 1950, saw a growing number of deer by 1970. In fact, the northern Piedmont was characterized as having deer herds in numbers that equaled carrying capacity. Practically all areas east of the Blue Ridge and the northern mountains were fully stocked with deer by 1970. However, southwestern Virginia was still characterized by isolated herds that had seen little growth. Only a very



few, small, isolated areas of deer, described as above carrying capacity, were identified.

The 1980 deer map of the SCWDS also demonstrated significant increases in the relative abundance of deer in Virginia. By 1980 the Virginia deer herd population was estimated at about 425,000. By 1980, a majority of the Tidewater, Piedmont, and northern Mountain physiographic regions were reported to be fully stocked at carrying capacity, also called environmental capacity. Southwestern mountain numbers had expanded slightly but were still



designated at below carrying capacity with significant areas where deer were still rare or absent.

Current estimates, based on computer reconstruction models, reveal that the statewide Virginia deer herd is fairly stable at approximately 900,000 animals, or perhaps more. The exponential growth of Virginia's deer herd from an estimated 25,000 to 900,000 over the past 70 years is a striking testament to the adaptability and reproductive potential of white-tailed deer, as well as to VDGIF's scientifically sound

Left: The first archery season initiated in 1954 resulted in the harvest of 42 deer. Staff photo.

Top: Initiated in 1947, mandatory big game check stations have allowed the Department to accurately monitor annual deer harvest levels on a county basis. Staff photo.

Above: Collection of biological data (sex, age, weight, etc.) from hunter-harvested deer provides valuable insights into deer population dynamics and herd/habitat conditions. Staff photo.

wildlife management practices and the dedication and wise stewardship of several generations of Virginians. □

This article was prepared by staff members of the Virginia Department of Game and Inland Fisheries.



HOME SWEET HOME



by Pat Keyser

Understanding deer habitat can make the difference between bagging that big buck or spending futile hours in the woods not seeing a thing. Knowing the deer's "home sweet home"—and how he uses it—can be a big factor in your success.

Wildlife habitat is an idea we frequently hear about these days, even in the popular news media. Many people realize it's composed of food, water, cover, and their proximity to one another.

Wildlife biologists have studied habitat for years, and hunters can benefit from the lessons they've learned about white-tailed deer.

Perhaps the most important lesson about habitat is one we've learned repeatedly with each study, whether conducted on mice or mountain lions: habitat determines whether or not a species will live in an area and the size of its population.



Important habitat components for deer include food, cover, water, and space. Of these four components, food is typically the limiting factor.

Habitat for all species is based on soil quality, and white-tailed deer are no exception. Fertility and productivity of a region's soil will directly and powerfully effect the ultimate quality of habitat.

This is seen in two ways. First, more fertile soils produce more plant matter (biomass) than do soils with low nutrients. This applies to produce from your garden, the amount of corn a farmer can raise, or the amount of sawtimber a forester can grow. Of course, the amount of plant matter translates into food available for wildlife. This principle is essential even to fisheries. If you want a great bass pond, build it in a watershed comprised of fertile soils.

Second, in regions with good soils there is a great deal of farming. The Shenandoah Valley and southeastern Virginia together account for 99 percent of the peanuts, 29 percent of the wheat, 39 percent of the soybeans, 46 percent of the grain corn, and 34 percent of the corn silage grown in Virginia. All of this grows on only about 22 percent of the Commonwealth's land area. By contrast, the central piedmont and mountainous western Virginia produce few

crops in a fairly large region. Agricultural activity in areas with productive soils enhances the effect of the soil on habitat by making a great deal of additional food available for deer. To make the case, 50 percent of the Boone and Crockett entries in the Old Dominion come from this 22 percent. Remember that soil is more than dirt!

It's clear that habitat is strongly influenced by vegetation. Even with the best of soil there can be a great deal of variation in what kind of plant cover is present, ranging from a hayfield to a forest of towering oaks. Although these days it may seem that deer like every type of plant cover, quite clearly they have preferences.

Good deer habitat is characterized by thick, tangled brush which provides an abundance of cover and palatable food (top left). Mature hardwoods, though extremely valuable for acorn production, provide minimal cover and very little other food (top right). Abandoned fields become good deer habitat beginning several years after they have last been tilled or mowed (below).

Perhaps their main preference is for early successional cover. That means they love brush. If you would be willing to walk through an area, then it is probably not prime deer habitat. A five- or six-year-old clear cut is perhaps the best example of prime cover. If you find a clear cut in low swampy or wet-natured land, then you probably know what a deer considers paradise. Thick tangles of greenbriar and honeysuckle,

blackberry patches all wrapped around pines, shrubs and hardwood sprouts 20 feet tall, create an environment where deer cannot be seen and where winter's wind won't blow.

Much of the food a deer needs can be found in these same tangled brushy areas. Blackberries, wild plums, persimmons and wild cherries are also common in these areas, as are two of the most important



© Dwight Dyke



deer foods in the Southeast, honeysuckle and greenbrier. Succulent, tender leaves, buds and twigs of a wide variety of shrub and weed species are also eaten regularly.

Another type of cover deer often use are thick pine stands about 12 to 25 years old. These areas provide cool, shady retreats during summer heat. During winter months they protect from snow and ice as well as provide thermal cover much like a



Bill Lea

Above: Browsing and grazing allow an adult deer to receive its required diet of 4-5 pounds of food per 100 pounds of body weight per day.

As tempting as pasture, alfalfa, and row crops may be as deer foods (*top right*), deer will pass up these foods to get a meal of acorns when they are plentiful (*bottom right*).

blanket on those nights when the mercury plummets.

Deer are not shy, though, about leaving their protected haunts when better food is available. Cultivated crops, many of which have been carefully bred to produce high quality animal feed, often add to a deer's diet, although usually not with a farmer's blessing.

However tempting an alfalfa field may be though, deer will walk across one to get to a meal of acorns. Studies have shown that when acorns are available they make up as much as 65 percent of a deer's diet. Hunters who rely on catching deer coming out into the fields to feed at dusk can wind up very frustrated during good mast years.

In most of Virginia, water is rarely, if ever, a limiting factor in deer habitat. Perhaps the one exception are some of the large dry ridges in the extreme western part of the



Bill Lea



Bill Lea

Deer Habitat



Good Habitat



Better Habitat



Best Habitat



Bill Lea



© Dwight Dyke

Top: Prescribed burning improves the habitat for deer and other wildlife species by stimulating vigorous growth of desirable species.
Above: Biologists Dave Kocka (VDGIF) and Buddie Chandler (USFS) inspect a lush understory which has been created through periodic prescribed burning on the George Washington National Forest.
Right: The concept of interspersion or the mix of different habitat types is very important to improving deer habitat. Graphics by Pels.



© Dwight Dyke



Bill Lea



state. Even here, though, springs often dot the mountainsides. Water may play a more critical role by providing additional cover. Creeks, rivers, beaver swamps—anything they can run through or swim across to escape dogs, their natural predator—all provide valuable cover. If such a swamp is adjacent to a clear-cut, all the better.

One other very important point concerning deer habitat has to do with the concept of interspersion, the mix of different types of cover. With the exception of good, brushy areas, no single cover type used by deer will by itself make for good habitat. A square mile of corn, a square mile of 20-year-old pine or a

Habitat management for deer may include plantings (top), daylighting of roads (above left), or timber harvests (above).

Top right: Al Bourgeois (VDGIF) (left) and Mark Holberg (VDF) (right) provide technical assistance in wildlife and forest management to landowner Bill Brauntworth (center).

Bottom right: Kenny Sexton (VDGIF) inspects an apple seedling protected from deer browse by a plastic tree shelter.

square mile of mature oaks all will support some deer, but none will support as many deer as it would mixed with other types of cover. Even the best cover, the brushy areas, can be significantly improved as habitat for deer if it is mixed in with all of the others. Better still, have a half dozen smaller brushy areas, each next to a smaller oak

stand, grain field and pine stand. Lace the whole confused mess with a few beaver swamps and a creek or two, and now you have optimum habitat.

But from the best to the worst of habitats, each has a limit on how many deer it can support. This limit is known as "carrying capacity." Areas with poor soil, vast expanses of uniform habitat or plant cover dominated by undesirable types have fairly low carrying capacities. Areas with good soil, a high amount of interspersion or plant cover in desirable vegetation, have higher carrying capacities. Where carrying capacities are high, not only can more deer be supported, but generally the deer will be larger.

Carrying capacity means that no matter how much we may want to, we simply cannot put more deer on the land than it will support. If we try, the results will not be pretty:



© Dwight Dyke



© Dwight Dyke



starvation, disease, widespread destruction of crops and forests and unsafe highways. Well before a herd reaches this point, though, hunters will begin to lose out through poorer quality animals and reduced herd productivity.

Can a landowner or hunt club increase carrying capacity? Yes, but it's not simple or easy. Most folks jump on the idea of a food patch. Unfortunately, a half acre or even two acre planting of clover, soybeans or some exotic miracle plant yet to be discovered in Tibet will not get the job done. Unless you are able to plant maybe 10 percent or more of an area to food crops, you will probably make very little difference in carrying capacity.

To really affect an area's habitat will require more drastic measures. The simplest of which is really not very drastic at all: allowing oak-dominated hardwood stands to mature to mast producing age. Other steps include prescribed burning in pine stands, harvesting unproductive or over-mature timber, and especially thinning timber stands. All of these cutting practices stimulate thick brush. Burning keeps the brush in a productive stage, ideal for deer. For this reason fallow fields also benefit from burning. Where burning these fields is not an option, returning to row cropping such as soybeans, wheat, corn or peanuts on



Kevin&Bethany Shank



Bill Lea

Top left: Disease and starvation are frequently the outcome when deer populations exceed the carrying capacity of the habitat.

Center: Winter, with its high energy requirements and lack of green vegetation, represents the most critical nutritional period for deer in Virginia. Above: Agricultural fields provide a very important habitat component for deer. Right: Deer herd condition and reproductive rates are closely related to habitat quality.

a commercial basis should be pursued. If row crops are not feasible, consider hay or pasture for this land. (This does not mean fescue!) Orchardgrass and clover both make an outstanding forage crop for cattle and deer. Alfalfa, legendary for its drawing power for deer, is a valuable asset to any cattle program.

These type of changes, on a large scale, will raise carrying capacity in a substantial way. Playing around "the edges" with food plots simply won't impact enough habitat. Deer will use the patches, though, and will often be seen around them.

Large scale changes in how we use land can have a dramatic impact on our nation's deer habitat and, therefore, our deer herds. Global



Bill Lea

commodity markets affect acres planted to soybeans, peanuts and corn. Technological changes in our ability to utilize pine fiber have made expansive pine plantations a part of our landscape. Dramatic increases in lumber demand result in accelerated harvesting of mature forests. As all these trends ebb and flow, so does deer habitat. The past few decades have been good for deer in the Old Dominion. And the future also looks good. □

Pat Keyser is a wildlife biologist supervisor with the Department's Wildlife Division. He works out of the Farmville Field Office.



*Look not mournfully into the Past.
It comes not back again. Wisely improve
the Present.*

—Robert Montgomery

Where We are...

...and Where

Soc Clay

Virginia's deer management program, conducted by the Virginia Department of Game and Inland Fisheries (VDGIF), has been noted for both its success and its simplicity. VDGIF's management efforts aim to develop the resource and provide as many recreational deer hunting opportunities as possible, as well as to respond to concerns for damage, such as crop depredation and deer-vehicle collisions.

White-tailed deer are by far the most popular game species in the state. Current hunter survey data indicate there are approximately 240,000 deer hunters in Virginia. This includes 65,000 archery and 80,000 muzzleloading enthusiasts. During the 1993 deer season, Virginia deer hunters spent nearly 3.8 million days afield in pursuit of deer and contributed a minimum of \$140 million dollars to the state's economy.

Check stations: Key Management Tool

One of the fascinating aspects of deer management in the Commonwealth is how accurate harvest information is gathered. The cornerstone of Virginia's deer management program is the system of big game check stations, which started in 1947. Check stations allow VDGIF to effectively monitor annual deer



re We're

game harvest data. Results are typically available about one month after the close of the deer season. In contrast to many states that estimate annual deer harvest totals, Virginia's deer harvest figures represent an actual known minimum count. This difference is significant.

Data from check stations reveal a steady increase in the number of deer taken annually with the exception of the early to mid-1960's. Only

of either-sex deer hunting days at the end of the general firearms season. Years of experience revealed that when the percentage of does in the total harvest did not exceed 30 to 40 percent, the total deer harvests in years following either increased or remained stable.

However, with Virginia's deer herds demonstrating record densities, management goals have changed. Today, with the exception



© Dwight Dyke

Going

harvests. Stations are operated by local volunteers who serve without compensation, and it is mandatory that hunters take their game to be registered at a check station. During the 1994 deer season there were approximately 1,500 big game check stations throughout the Old Dominion.

The system is a joint operation of the Wildlife and Law Enforcement divisions. Law Enforcement selects and supervises station sites, while Wildlife provides the materials, tabulates and reports the annual big

4,019 were checked during the first year of the program in 1947; more than 200,000 deer were taken in each of the past three hunting seasons.

Deer management in Virginia is based on the fact that deer herd density and health can best be controlled by regulating antlerless deer harvest levels. For years, Virginia's deer management program was designed to allow deer herds to increase by maintaining a low to moderate percentage of female deer in the total legal harvest. This was accomplished by incrementally increasing or decreasing the number



© Dwight Dyke

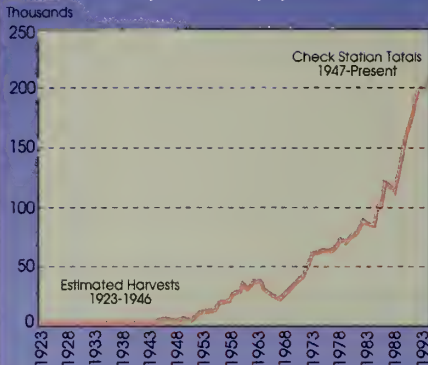
Top left: White-tailed deer are the most popular game species in the Commonwealth. In 1993, an estimated 240,000 Virginia deer hunters spent approximately 3.8 million days afield in pursuit of deer.

Top: Game wardens play a key role in supporting some 1,500 big game check stations throughout Virginia. Lt. Lee Haupt meets with Bill Wilson of B & R Grocery in Lyndhurst.

Above: Big game check stations are the cornerstone of Virginia's deer management program.

of several counties in far southwest-
 ern Virginia and on National Forest
 lands in western Virginia, the em-
 phasis has moved from establishing
 and expanding deer herds to active-
 ly managing their growth. During
 the late 1980's and early 1990's, deer
 seasons were expanded, bag limits
 increased, and the number of gener-
 al firearms either-sex hunting days
 was boosted. The result was a dra-
 matic statewide harvest increase.

Virginia Deer Harvest 1923-1994



Check station data provide important statistics for wildlife management decisions. For instance, the following information supports the idea of managing the herd on the basis of antlerless deer harvests. During the 1994 season, a minimum of 209,373 deer were harvested by deer hunters in Virginia. This total included 120,360 male deer (95,636 antlered males and 24,724 male fawns, commonly called button bucks), 87,530 female deer, and 1,483 deer of unrecorded sex. Statewide, archers and muzzleloaders accounted for 18,700 and 31,090 deer, or 8.9% and 14.8% of the total harvest, respectively. Overall, female deer composed 42.1 percent of the total reported harvest.

© Dwight Dyke



Examples of deer hunting regulations adopted during this transition period included an increase in the season bag limit from two to three deer per season, initiation of a statewide early muzzleloading season, a shift of the first either-sex day of the general firearms season to the first Saturday of the season and later to the first two Saturdays, an increase in the daily bag limit from one to two deer per day, the initiation of bonus deer permits, and significant increases in general firearms season either-sex deer hunting opportunities in most areas. Consequently, between 1988-1992, total deer harvest levels increased 75 percent from 114,562 to 200,446 and the percentage of females harvested increased from 32.9 to 39.6 percent. This change in management direction was designed to increase antlerless deer harvest levels in an attempt to stabilize and effectively manage the deer herd.

Deer Management Assistance Program

Besides standard deer season regulations, VDGIF has two deer management programs for private land:



© Dwight Dyke

Top: In 1994, over 65,000 bowhunters harvested nearly 19,000 deer.

Above: The Deer Management Assistance Program helps sportsmen, like John Cowden of Fort Lewis Lodge in Bath County, work with his local VDGIF biologist, Al Bourgeois, to meet his deer management objectives.

Right: A primary objective of DMAP is to increase communication between landowners and the Department of Game & Inland Fisheries. VDGIF biologist, Pat Keyser, discusses DMAP with the Wilson /Webster Creek Hunt Club of Amelia County.

the Deer Management Assistance Program and the Damage Control Assistance Program.

The Deer Management Assistance Program (DMAP) started in 1988. DMAP's primary objective is to allow private landowners and hunt clubs to work together on a local level to manage deer herds by allowing more opportunities to harvest antlerless deer than could be obtained under the existing system of county regulations. This requires special DMAP permits. Secondary objectives are to increase VDGIF's biological harvest database and to improve communication between deer hunters, landowners, and VDGIF.

Participation in DMAP is open to all landowners and hunt clubs in Virginia. To participate, a club or landowner must apply to their local district wildlife biologist prior to

ing, and general firearms) and are valid for antlerless deer—females and male fawns—only.

Participation varies widely by region. Land ownership patterns such as the average tract size, access control, the relative amount of private versus public land, as well as season length, hunting methods, hunter attitudes, and management objectives all influence regional DMAP participation. Consequently, in 1994 more than half of the acreage enrolled in DMAP was located in the eastern Tidewater Region, which has a very strong tradition of private land hunt clubs. Less than one tenth of the acreage enrolled in DMAP was located west of the Blue Ridge. Overall, more than 350 properties were enrolled in DMAP, encompassing more than 1 million acres.

A majority of DMAP cooperators voluntarily practice what is com-

monly known as quality deer management. The management objectives of quality deer management are twofold. First is to place adequate harvest pressure on the antlerless segment of the deer herd to insure that the herd is held within the carrying capacity of the habitat. The second objective is to reduce the harvest pressure on young antlered bucks so that more survive into older adult age classes. In most



Deer damage to soybeans is a significant problem for Virginia farmers. VDGIF biologist, Jim Bowman, discusses crop damage with Mike Milton, Charlotte County.

Damage Control Assistance Program

The Damage Control Assistance Program (DCAP) also was initiated in 1988 and is designed to increase a landowner's deer damage management options by allowing a more flexible harvest of antlerless deer than could be obtained under the standard system of county regulations through the issuance of DCAP permits. The primary objectives of DCAP are to provide site-specific assistance in the control of crop depredation or other property damage by deer and also to attempt to shift closed-season kill permit deer harvests into the open deer season. Like DMAP tags, DCAP permit tags are valid during all open deer seasons including the archery, muzzleloading, and general firearms seasons for the license year issued and can be used only to harvest antlerless deer.

Participation in DCAP is limited to landowners and lessees with damage documented by a VDGIF game warden. Deer crop damage is



September 15. All new DMAP participants are required to collect biological data (weights, lower jaws, etc.) from all deer harvested on their property for one hunting season prior to becoming eligible for DMAP tags. Tags are issued on the basis of the cooperator's management objectives and the status and condition of the local deer herd. DMAP tags may be used during any open season (archery, muzzleload-

monly known as quality deer management. The management objectives of quality deer management are twofold. First is to place adequate harvest pressure on the antlerless segment of the deer herd to insure that the herd is held within the carrying capacity of the habitat. The second objective is to reduce the harvest pressure on young antlered bucks so that more survive into older adult age classes. In most

a management problem in nearly every county in the Commonwealth. A deer damage committee established by VDGIF estimated the amount of agricultural crop damage caused by deer in Virginia in 1992 was approximately \$11.4 million. The majority of this damage was to soybeans, peanuts, and orchards at \$6.3, \$2.0, and \$1.9 million, respectively. Deer damage to property in urban/suburban environments (e.g., damage to ornamental plantings and shrubbery and vegetable gardens) was not estimated.

Deer-vehicle collisions are also a significant management concern statewide. Because it is assumed that deer-vehicle collisions are in some manner positively correlated to the number of deer within a specified area, deer management objectives and subsequent deer harvest levels may influence deer-vehicle collisions. It should also be noted the data from numerous states clearly indicate that deer-vehicle collisions are closely related to the daily and seasonal activity patterns of deer, with the majority of accidents occurring daily just prior to dawn or just after dusk and seasonally in the fall when deer are most active. Virginia Department of Transportation vehicle accident data reveal that Commonwealth motorists have in the past reported on average, several thousand deer-vehicle collisions annually costing millions of dollars in property damage.

Urban deer conflicts are one of the fastest growing deer management issues in Virginia. Over the past five years, the Department has been officially contacted by numerous city and county governments regarding urban deer problems. Urban deer management conflicts typically involve residential areas where deer numbers have exhibited significant increases leading to high levels of damage to ornamentals and property.

Each DCAP cooperator is issued five DCAP permits. DCAP permits can be utilized only on the designated area for which they were issued. For the past three years, annual

DCAP participation has averaged approximately 700 cooperators statewide. In a survey of DCAP co-operators following the 1994 season, 44 percent believed that deer damage had been reduced as a result of their participation in the DCAP program. Fifty-eight percent had been DCAP cooperators for 3 years or longer. Overall, 79 percent rated the program as either good or excellent. For more information on DMAP or DCAP contact: Deer Project, VDGIF, Route 6, Box 410, Forest, VA 24551; (804) 525-7522.



Bill Lea

Historically known for a more cautious approach to deer management, Virginia today has one of the most progressive deer management programs in the country. For the upcoming 1995 deer season, 22 counties (or portions of counties) will have full season, either-sex general firearms deer seasons. These full season, either-sex deer seasons, combined with the regulation allowing unlimited use of bonus deer permits on private lands, are designed to provide landowners and farmers the most flexible and responsive regulatory framework possible for managing deer.

Some smaller parts of the big management picture

Supplementing harvest data in the development of deer regulations are biological data collected from harvested deer by Department personnel at technical check stations in western Virginia and statewide by DMAP cooperators. During the 1993 deer season biological data (age, weight, sex, etc.) were collected



Bill Lea



Scotty Lovett

Above: Because public concerns vary from urban damage, to highway safety, to agricultural damage, there is no single management solution to deer issues.

Right: Biologist Pat Keyser discusses solutions to deer damage with farmer, Gary Bray.



from more than 17,000 deer, or about 8 percent of the total reported deer harvest. Analysis of this biological data, combined with check station harvest trends, provides important information about the current status and recent changes in deer herd numbers and conditions. Evaluation of deer herd status and condi-

tion is based on four criteria: harvest trends, the harvest sex ratio, harvest age structure/mortality statistics, and condition indices.

Historically, the harvest sex ratio has been the primary management tool used by the Department to manipulate deer herds. If the management objective is to increase deer

herds, as it currently is in far southwestern Virginia and on some National Forest lands, female harvest and mortality rates are maintained at low to moderate levels.

Several deer herd age structure and reproduction/productivity statistics are monitored to evaluate herd status and condition. The first is the antlered male age structure. In most hunted deer herds, the male age structure is relatively young due to hunting pressure. Deer herds that are declining or are being held at low densities by hunting pressure are frequently characterized by young age structures.

Bucks grow their first set of legal antlers (antlers visible above the hairline) at 1½ years of age and are typically exposed to high hunting mortality rates. When high hunting pressure is applied to young antlered bucks, very few survive into older age classes (greater than or equal to 3.5 years of age). In Virginia, the impact of hunting pressure on the male age structure can be detected in the fact that 70 percent or more of the bucks harvested are 1½ years of age or less. The proportion of antlered bucks surviving to 4½ years of age or older is about 3 percent of the reported harvest. What this means to the average Virginia deer hunter is that the chances of killing a mature, adult male white-tailed deer are slim.

Other harvest age structure factor(s) that are monitored closely are several fawn harvest statistics. Harvest fawn per doe ratios and percent fawns in the antlerless harvest both provide a relative index of the past year's recruitment or reproduction. In most habitats, recruitment rates are closely related to herd density, with healthy, low density herds being more productive. Under optimum conditions, deer herds are capable of increasing at an annual growth rate of 30-40 percent.

Several condition indices are routinely monitored for both sexes. Average dressed carcass weights and antler development statistics among antlered bucks are both good indicators of overall health and vigor in a deer herd. Records of weight and

How Hunting Seasons Are Set

State deer hunting regulations are reevaluated every other year on odd years; they were evaluated in 1993 and this year, and are scheduled for reevaluation in 1997. Depending on management goals and current deer herd status and condition, regulations are amended so that future deer harvests are increased or decreased by adjusting the length of the season, bag limits and perhaps the number of general firearms season either-sex deer hunting day(s) regulations on a county by county basis.

The regulatory process typically stretches over six months and represents a major investment of staff time and effort. Even before the close of the deer season, the Wildlife Division begins holding a series of staff meetings to identify needs and issues that may need to be addressed. Following the close of the deer season and the tabulation of check station harvest results, a series of regional meetings is held with VDGI law enforcement and U.S. Forest Service personnel to discuss potential changes. After the regional meetings, final regulatory proposals are drafted and reviewed.

After game management professionals have formed proposals, their suggestions are made public through a presentation to the Board of Game and Inland Fisheries at a public meeting in early spring. If approved by the Board, proposed regulation changes are advertised and presented across the Commonwealth in a series of statewide public input meetings.

The importance of the public input meetings should not be underestimated. In fact, in 1995, for the first time, the Department held public meetings in every congressional district. After the series of meetings, the Board considers the public comments that were collected. Based upon this public input, the Board makes a final decision whether to adopt, amend, or withdraw the regulatory proposals.

... there are four categories of outdoors men: deer hunters, duck hunters, bird hunters, and non-hunters. These categories have nothing to do with sex or age, or accoutrements; they represent four diverse habits of the human eye. The deer hunter habitually watches the next bend; the duck hunter watches the skyline; the bird hunter watches the dog; the non-hunter does not watch.

When the deer hunter sits down he sits where he can see ahead, and with his back to something. The duck hunter sits where he can see overhead, and behind something. The nonhunter sits where he is comfortable.

Aldo Leopold
A Sand County Almanac

© Dwight Dyke

antler development by male age class provide an index of current herd condition and, when examined over time, can demonstrate significant changes in herd size and/or habitat conditions. The yearling buck age class (1½-year-old) is the most important to interpreting the balance between deer herd size and habitat carrying capacity. This age class typically contains the majority of antlered bucks harvested. Yearling buck condition indices will vary between and within physiographic regions depending on the quality and quantity of deer habitat. For example, healthy productive deer herds in the southwestern Piedmont routinely exhibit average weights of

100 pounds or more, with 4-6 antler points, antler beam diameters of 20 millimeters or more and less than 25 percent spikes. Conversely, healthy deer herds in the Tidewater region may average 85-90 pounds, 3-4 antler points, 17-19 millimeter beam diameters, with approximately 30 percent spikes.

The percentage of yearling bucks that are spike-antlered is an indicator of herd health. In most habitats, as deer numbers increase or carrying capacity declines, herd conditions will deteriorate and the percentage of yearling bucks that are spike-antlered will increase. Conversely, as deer are reduced or carrying capacity is increased, herd



Above: Initiated as an experimental season in 1973, nearly 80,000 muzzleloading enthusiasts harvested more than 31,000 deer in 1994. Above right: Department biologist, Al Bourgeois describes how to age deer using a lower jaw to DMAP cooperators.



© Dwight Dyke



Bill Lea

The Future

Whatever the future holds for white-tailed deer, it is currently making a huge economic impact in Virginia.

According to the 1989 VDGIF hunter survey, 55 percent of all hunter-days spent afield in Virginia were in pursuit of white-tailed deer. The 1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reported that hunter expenditures in Virginia were \$255,882,000. When results from these two surveys are combined, current Virginia deer hunter expenditures are estimated to be at least \$140 million annually. This figure only includes direct hunting expenditures and does not use an economic multiplier factor or nonconsumptive and aesthetic values.

health will improve, and the percentage of spike-antlered yearlings will decrease. Within the same area, forked-antlered yearlings generally average 5 to 15 pounds heavier than spike-antlered yearling bucks.

Lactation data are collected from yearlings and adult female deer. Like antler data in males, lactation data in does are good indicators of conditions in a deer herd. In most habitats, lactation rates will decrease as herd density increases or habitat carrying capacity declines. The opposite is also true, lactation rates will increase as herd health increases. In healthy deer herds, lactation rates in the adult age classes should be high. In good conditions, adult does will

average two fawns per year and, contrary to hunter's tales about old barren does, healthy does will keep producing fawns as long as they live. Lactation data in yearling does are very useful. Lactation among yearling does is evidence of fawn breeding, which, in Virginia, typically occurs only in healthy low density deer numbers. □

This article was prepared by staff members of the Virginia Department of Game and Inland Fisheries.

HUNTERS FOR THE HUNGRY



VIRGINIA

When it comes to finding worthy causes, it's hard to beat Hunters for the Hungry. The program depends on the success of Virginia's deer hunters, who provide venison that is processed and distributed to needy Virginians across the Commonwealth. Hunters for the Hungry is a unique, cooperative effort built on community spirit.

Sportsmen are being asked to donate \$1 to Hunters for the Hungry. Special envelopes were distributed by Hunters for the Hungry to all of the Department of Game and Inland Fisheries' license agents to help the "A Dollar Makes a Difference" campaign. The Department encourages all hunters—not just deer hunters—to use these envelopes and send Hunters for the Hungry a contribution.

"If every hunter in Virginia would contribute \$1 we could distribute well over 250,000 pounds of quality venison and promote the

Virginia deer hunters have donated more than 250,000 pounds of venison to the Hunters for the Hungry program over the past four years.

positive aspects of our sport," says David Horne, Director of Hunters for the Hungry. "People need to know that hunters are helping the needy."

Becky Norton Dunlop, Secretary of Natural Resource, says Hunters for the Hungry offers sportsmen the opportunity to demonstrate a caring commitment to their fellow human

beings and a generous, sharing spirit. "Hunters need to know this is a great way to help those who are less fortunate and give something back to their community. By putting food on the table of needy Virginians, they're also building good

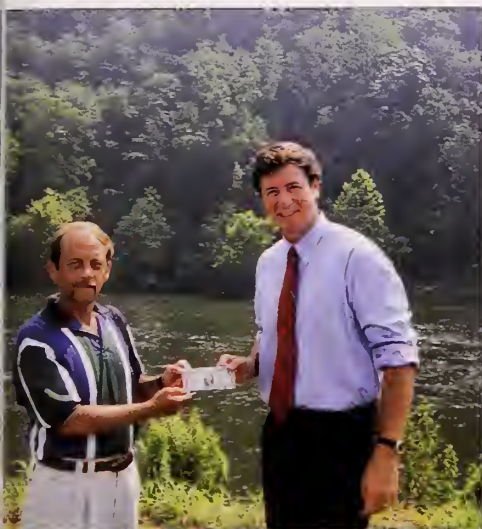
will toward hunters."

Dunlop and Governor George Allen recently gave a boost to efforts to raise money for Hunters for the Hungry. They attended the Governor's dinner to Benefit the Hungry, hosted by the National Rifle Association. Earlier this year, Dunlop presented Hunters for the Hungry with a certificate of recognition from the Governor, commending the program and sportsmen for their charitable efforts.

According to VDGIF statistics, more than 200,000 deer have been harvested in each of the previous three hunting seasons. Virginia's deer herd, which numbers more than 900,000, has been well man-



© Dwight Dyke



David Horne, left, received the symbolic dollar from Governor George F. Allen, right, to kickoff this year's fund-raising campaign, "A Dollar Makes a Difference."

aged. Hunters for the Hungry makes good use of the resource.

Gifts can be made to Hunters for the Hungry, Virginia Hunters Who Care, P.O. Box 304, Big Island, VA, 24526. For more information about Hunters for the Hungry, call 1-800-352-4868.

Hunters for the Hungry: A Retrospect

Hunters for the Hungry began in 1991. During the first week of the 1991 general firearms season the goal of 15,000 pounds of venison was easily met, and the charitable potential of the program hit home. The goal was increased to 30,000 pounds, and by season's end Virginia hunters had outstripped the original goal by more than double; they donated more than 33,000 pounds of quality venison.

Even with this outstanding start, the full potential of the program was yet to be fully understood. With the cooperation of many individuals and groups, both hunters and non-hunters, the program continued to grow.

During 1992, the number of processors expanded, and more hunters learned they could make a positive contribution to their communities, for the hungry and for hunting. More than 67,000 pounds of venison

were donated, processed, and distributed. This tremendous response made clear the real potential of the effort. In 1993 a new nonprofit organization was formed specifically to operate the Hunters for the Hungry program. This corporation, Virginia Hunters Who Care, has continued to expand the venison distribution and assists in efforts to educate and inform Virginians about hunting, safety, the outdoors, and hunger within our state.

In four short years of operation, Hunters for the Hungry has distributed more than 250,000 pounds of quality venison. This is more than one million servings of high protein, low-fat food made available through the generosity of successful Virginia hunters.

Interest in, and commitment to Hunters for the Hungry has now developed into a cooperative effort that extends even beyond the hunting community; some financial support comes from churches, civic groups, businesses, corporations, and individuals. These contributions, combined with the outstanding participation of the hunting community, have benefited the program.

The operation of the program is very simple. Hunters are asked to donate deer either in whole or in part. Funds are raised to cover the costs of having the meat professionally processed, cut, wrapped, and frozen. The venison is distributed to those in need through food banks and other nonprofit charities helping to feed Virginia's hungry. The program succeeds because everyone wins.

First, successful management of Virginia's deer herd requires increased seasons and bag limits so hunters may harvest additional deer. Ethical hunters want their harvest to be put to its best use, therefore many hunters make generous contributions to the needy through Hunters for the Hungry.

Second, Virginians can voluntarily assist the needy. This is true in rural as well as urban areas. More than one million emergency meals are provided monthly by charities

across the state. A full 50 percent of these are provided to children. Additionally, meat is the least available and most expensive food item to the nonprofit groups helping the needy.

Finally, the managed harvest of the deer herd benefits the deer themselves. By managing herd density through hunting, the health of the deer is maintained.

Hunters for the Hungry ties together all these positive elements. The hungry are fed. The deer herd is maintained in a healthy manner, and hunters get to participate in an effort that shows their concern and exemplifies the true spirit of the Virginia hunting tradition.

But much more needs to be done, and much more can be done. In each of the last three years, Hunters for the Hungry has had to limit the amount of deer donated by hunters. Funds have just not been available to cover costs involved in processing and distributing the venison. Hunters for the Hungry has been forced to slowly control its growth into many areas of the state due to the same over-extended financial situation.

It is realistic to annually make in excess of 175,000 pounds of venison available to the hungry of Virginia. The need exists. Hunters are willing to provide the deer. What is needed is the additional funding to cover the associated costs. Every dollar donated helps Hunters for the Hungry feed those among us who are less fortunate. Each \$30 tax-deductible contribution allows another deer to be accepted, providing approximately 50 pounds of quality venison for distribution. At 60 cents per pound the cost effectiveness of the program is also evident. At supermarket prices the same cuts of beef would cost \$3 per pound.

Thousands of Virginia's hunters have shared their success, their time, and their money with those in need. Many groups, organizations, associations, and individuals have participated. Growth of the Hunters for the Hungry program will continue as more become involved. □



Quail Unlimited Hears from Deputy Secretary

The Central Virginia Chapter of Quail Unlimited gathered to break bread and clay pigeons, and to see bird dog demonstrations at the group's annual fund-raiser recently at Izaak Walton Park in Charles City County.

The Central Virginia chapter, one of 11 in the Old Dominion, boasts about 300 members, making it one of the nation's top ten Quail Unlimited chapters. And their accomplishments show they're *active* members.

These hunters have raised thousands of dollars to enhance quail management. For example, the Central Virginia chapter purchased equipment that was donated to the Department of Game and Inland Fisheries, which in turn loans the equipment to farmers so they can plant warm weather grasses for

Deputy Secretary of Natural Resources Tom Hopkins (left) hears about quail management from Patty Moore, Farm Wildlife Program Manager with VDGIF.

habitat. Members also keep busy coordinating a statewide program of distributing seed to the other Virginia chapters for habitat projects. The Central Virginia unit also supports educational and youth programs, and is helping to finance a VDGIF quail nesting ecology study.

Their efforts have been noticed by the national organization of Quail Unlimited. At the chapter's annual fund-raiser, where members traded shots at clay pigeons, viewed a demonstration of bird dogs and dined on barbecue, the chapter and its president were singled out for their hard work. President James S. Jones was honored for his leadership, and the club was recognized for recruiting 10 or more sponsors—members who contribute \$250.

The group's conservation efforts also brought plaudits from Thomas L. Hopkins, Deputy Secretary of Natural Resources. The Administration of Governor George Allen wants to encourage the kind of stewardship of natural resources demonstrated by the Central Virginia chapter of Quail Unlimited, he said.

"Virginians, working individually or through organizations like Quail Unlimited, can have a tremendous impact on enhancing our environment and conserving natural resources," Hopkins said. "The work of your chapter and the other Quail Unlimited chapters is of great importance. And we want to challenge you to do even more." He asked the group to consider managing public land for quail habitat and taking a more direct role in research.

Quail Unlimited also paid tribute to the hard work of a VDGIF employee. Small game research biologist Mike Fies was the recipient of the chapter's Max Ailor award, given in recognition of outstanding work in upland game management. Fies, who is leading the quail nesting ecology study, updated chapter members with a report on some of his initial findings. □

Dunlop Speaks at Big Game Contest

Becky Norton Dunlop, Secretary of Natural Resources, struck a positive chord with the sportsmen at a statewide big game contest when she spoke of the high quality hunting opportunities available in Virginia.

"It's tremendous to live in a state that has such rich natural resources," Dunlop said. "Hunting is a time-honored tradition in Virginia,



Secretary Dunlop and Ken Pickin review entries in the big game contest.

and I'm sure you'll agree this tradition includes the wise and prudent wildlife management by the Virginia Department of Game and Inland Fisheries."

It was the 56th annual Big Game Contest of the Virginia Peninsula Sportsmen's Association (VPSA); there were 201 total entries, covering general firearms, archery and black powder. The Virginia Department of Game and Inland Fisheries is a co-sponsor of the contest.

"Governor Allen and I both support increased outdoor recreational opportunities. We have been truly blessed in the Commonwealth, and as we can see from these fine trophies, you have certainly taken advantage of hunting opportunities in Virginia," Dunlop said.

Ken Pickin, president of the

VPSA, said that the audience appreciated hearing from Dunlop about their contributions to Virginia, as hunters. "They were right interested to hear about the \$140 million dollars hunters put into the economy each year. We've always had a tremendous working relationship with the Game Department, and we agree with Secretary Dunlop that the Department has done an excellent job managing wildlife. We were honored to have her speak to us and participate in this event honoring Virginia sportsmen."

Dunlop also expressed her well-known commitment to the highest hunter ethics. "The Administration, and I trust all of us here, strongly advocate sound ethics in the sportsmen's community and in the hunting community. We all know it only takes one bad actor to cause negative press, and that can make the rest

of us look irresponsible. The Administration and the Department of Game and Inland Fisheries are committed to promoting good ethics among hunters, and to discouraging bad actors. And I'm sure all of us here support hunter safety at all times."

Here are the state champions in the deer classes, along with the location the deer was taken:

General Firearms

12 points and above:

Mark Collins, Bedford County

9-10-11 points:

Michael L. Phelps, Halifax County

7-8 points:

James M. Hurst, Surry County

6 points and under:

Carlton Epps, Pittsylvania County

Archery

12 points and above:

Melissa Boone, Floyd County, (a 16-pointer)

9-10-11 points:

Charles C. Nichols, Botetourt

7-8 points:

John B. Mitchell, Southampton County

6 points and under:

Daron R. Smith, Loudoun County

Black Powder

12 points and above:

Kevin L. Alley, Pulaski County, (a 16-pointer)

9-10-11 point:

Barry W. Steele, Bedford County

7-8 points:

James E. Hughes, Jr. Amherst County

6 points and under:

Lloyd L. Ferguson, Appomattox County

Habitat

by Nancy Hugo

Hickory

Of all the mast-producing trees in Virginia, hickories are the most under appreciated. They lack the elegance of beeches, the flavor of walnuts, or the reputation of oaks, but what the hickory lacks in glamour it makes up for in grit.

These long-lived trees are as tough as the pioneers who used them to help wend their way west. Strong and flexible, hickory wood was the perfect material for fashioning wagon wheels, and hickory saplings made perfect hoops for holding barrel staves in place. Even today, hickory is used for making things that can take violent strains—things like tool handles, skis, and baseball bats. “Hickory switches” were also favorites of some parents, for reasons some of us might rather forget. Andrew Jackson took his nickname, Old Hickory, from this tree because the members of his backwoods militia (and later most of his countrymen) considered him hickory tough. And the tree deserves its tough reputation. According to tree expert Donald Peattie, by weight, hickory wood is stronger and more elastic than steel. It’s also higher in fuel value than any other American wood except locust; according to Peattie, a cord of hickory is almost equivalent in thermal units to a ton of anthracite.

Hickory nuts are hard, too. “He’s got a hick’ry nut spirit,” old-timers used to say when they meant a man had a hard heart. Shaped like a pear or punching bag, a 1½” to 2” hickory fruit has a thick husk that eventually splits open into sections, but the nut inside is still protected by a hard shell. It takes a bird with a jackhammer bill or an animal with teeth like

a squirrel’s to pierce it. “I’ve been in the woods when the shells were falling like rain,” says woodsman Richard Salzer, describing the relish and speed with which squirrels devour hickory nuts. Cars sometimes provide wildlife an unexpected bo-



Nuts, flowers, foliage and bark of the hickory provide food for wildlife.
Photo by Hal Horwitz.

nanza when they drive over hickory nuts and crack their shells. According to wildlife food experts, in addition to eating the tree’s nuts, wildlife browse hickory flowers, bark, and foliage. The tree’s benefactors include chipmunks, crows, jays, nuthatches, woodpeckers, wood ducks, pheasant, quail, wild turkey, bear, fox, rabbits, raccoons, and deer.

People have a taste for hickory nuts, too. In fact, it’s a culinary use of the nuts that is responsible for the tree’s name. The word hickory reportedly comes from the American Indian word “pawcohiccora,” which refers to a “hickory milk” made from steeping the pounded nuts in boiling water. Wrote William Bartram, “The Creeks store it [shagbark hickory nuts] in their towns. I have seen above an hundred bushels of these nuts belonging to one family. They pound them to

pieces and then cast them into boiling water, which, after passing through fine strainers, preserves the most oily part of the liquid; this they call by a name which signifies hickory milk; it is as sweet and rich as fresh cream and is an ingredient in most of their cooking, especially hominy and corn cakes.”

Slow-growing but long-lived, hickories are typically American trees (most of the 23 species grow inside our borders). We have about eight species of hickory in Virginia, and they go by names like pignut, shagbark, bitternut, and mockernut. Some of our hickories, which will endure poorer soils than many other hardwoods, grow in moist forests and flood plains, others on well-drained, upland sites. The mockernut or white hickory (*Carya tomentosa*) is one of the most common hickories in

the state. Although all hickories have aromatic fruit and foliage, the leaves and nut husks of mockernut hickories smell especially good. Mockernut hickories also have soft hairs on the underside of their leaves (*tomentosa* means “densely covered with soft hairs”). Each mockernut hickory compound leaf is made up of seven or nine leaflets, the number of leaflets being an identifying feature of hickory species. (A pignut hickory, *Carya glabra*, for example, usually has five leaflets to a compound leaf.)

Hickory foliage turns a beautiful golden yellow to bronze in the fall, and while it’s not the flashiest foliage in the woods, light coming through it will warm you like a wood fire. Add a lavender aster to a woodland lit with hickory foliage, and you’ve got a sure tonic for hick’ry nut heart. □



by Col. William Antozzi, Boating Safety Officer

What's New and Exciting

Much of the new technology for boating is aimed at safety. Here is a brief look at some of the most up-to-date equipment you can put on board.

Boat operators can now see instrument data displayed on their windshields. That display permits the operators to view vital marine and navigation data without taking their eyes from the scene ahead. The data is projected onto a see-through screen located at eye level between the helm and windshield. The projected data appears to float 50 to 200 feet in front of the boat. Various displays include boat heading, speed, water depth, temperature, engine r.p.m. and engine temperature.

Recently unveiled outboard motors promise fuel economy to increase by more than 35 percent and to reduce exhaust emissions by 70 to 80 percent. Basically the improvements are the result of direct fuel injection and relocation of the exhaust ports. The new technology pressures the fuel charge at up to 200 pounds per square inch, atomizing fuel into microscopic droplets, thus promoting cleaner burn.

There is a new infrared technology which removes a lot of fear and danger related to night operation. Only about 30 percent of boaters venture out after dark, but that number should increase because of a new thermal-imaging system. Basically it is a night-imaging technique that detects minute variations in heat radiated from various things on and in the water, such as boat motors, swimmers, buoys, and break-



New technology can add enjoyment to boating, but safety must remain a top priority.

waters. It will reveal those things in actual picture form.

Those boaters who are interested in the global positioning system (GPS) should know that there is a portable GPS navigation system operational unit weighing only 9 ounces, which has a graphic screen, one-thumb operation and is not much larger than a candy bar. The one-thumb operation permits all functions to be accomplished with one hand. Cost is between \$500 and \$800. It is waterproof and humidity-proof.

Some personal watercraft have suspension systems located under the seat, which act like a shock absorber, compressing during tight turns. During turns the compression pulls the machine down in the water, permitting closer cornering. Many of the little PWC's have 100 horsepower engines. Some will go 65 MPH and they are getting more powerful every day. PWC operators must remember that they are riding on a boat, not a toy, and must conduct themselves accordingly. □

By Joan Cone

Give Thanks For Venison Too

Are you looking for that perfect holiday gift? Consider a vacuum packer. With it, you can package your game or fish so it can be frozen for a year or more without freezer burn.

By removing air from around your game, you remove the oxygen which causes freezer burn. The partial vacuum you'll secure by using plastic wrapping plus removing air and then sealing it is more than satisfactory for the average household.

MENU

Mushroom-Cheese Spread

Venison Roast With Vegetables

Holiday Fruit Salad

Chocolate Raspberry Truffle Dessert

*Mushroom-Cheese Spread

This unique recipe from a newly published book calls for wild mushrooms which are now available in most supermarkets.

2 cups water
1/2 pound mixed fresh wild mushrooms
1 package (8 ounces) cream cheese, room temperature
1/4 teaspoon garlic powder
1 tablespoon butter
Salt and freshly ground pepper to taste

Bring 2 cups water to a boil, drop in mushrooms and blanch for 3 minutes. Drain on a cloth towel. In a food processor, blend cream cheese, garlic powder, butter and mushrooms until smooth. Season with salt and pepper to taste. Serve with crackers. Makes 1 cup.

Venison Roast With Vegetables

1 Reynolds Oven Bag, large size
1/4 cup flour
1 can (14 1/2 ounces) Italian-style stewed tomatoes, undrained
1 envelope onion recipe soup mix

1/4 teaspoon pepper
3 to 3 1/2 pound boneless venison roast
4 medium potatoes, quartered
4 medium carrots, cut in 2-inch pieces

Preheat oven to 325°. Shake flour in oven bag and place in a 13 x 9 x 2-inch baking pan. Add tomatoes, soup mix and pepper. Squeeze bag to blend ingredients. Place roast in bag and turn bag to coat roast with sauce. Place vegetables in bag around roast. Close bag with nylon tie and cut 6 half-inch slits in top. Bake until roast is tender, 1 1/2 to 2 hours. Serve sauce over sliced venison. Makes 6 to 8 servings.

Holiday Fruit Salad

1/2 cup salad or vegetable oil
Grated peel of 1/2 orange
1/3 cup fresh squeezed orange juice
Juice of 1/2 lemon
2 tablespoons honey
1 teaspoon paprika
1 teaspoon milder soy sauce
2 oranges, peeled and cut into half-cartwheel slices
1 medium avocado, sliced
1 kiwifruit, peeled, thinly sliced
12 walnut halves
1 small head iceberg lettuce, cut into 4 thick slices

To make dressing, combine the oil, orange peel, orange and lemon juices, honey, paprika and soy sauce in a jar with a lid; shake well. Cover and chill. On 4 individual salad plates, arrange orange slices, avocado, kiwifruit and walnuts on lettuce slices. Serve with dressing. Makes 4 servings.

Chocolate Raspberry Truffle Dessert

Cake Layer

1 1/4 cups semisweet chocolate chips (7 1/2 ounces)

1/2 cup butter or margarine
3/4 cup packed brown sugar
2 large eggs
3/4 cup flour
1/2 teaspoon baking powder

Truffle Filling

1 cup semisweet chocolate chips (6 ounces)
1 package (8 ounces) light cream cheese, softened
1/3 cup red raspberry preserves
1/4 cup powdered sugar

Glaze

1/4 cup semisweet chocolate chips
1 teaspoon solid vegetable shortening

Preheat oven to 350°. Grease a 9 x 9 x 2-inch baking pan or dish. To make cake layer, melt 1 1/4 cups chocolate chips with butter; cool slightly. Beat brown sugar and eggs in a large bowl with electric mixer. Add chocolate mixture; mix well. Stir in flour and baking powder. Spread evenly in prepared pan. Bake 30 to 35 minutes until a toothpick inserted in center comes out clean; cool.

To make truffle filling: melt 1 cup chocolate chips. Beat cream cheese and preserves in a small bowl with electric mixer until smooth. On low speed, beat in melted chocolate and powdered sugar. Beat until fluffy. Spread over cooled cake layer.

To prepare glaze: melt 1/4 cup chocolate chips with shortening. Drizzle over filling. Chill 2 hours. Cut into small serving pieces, as this dessert is very rich. □

***MUSHROOMS**—Over 100 Tantalizing International Recipes, by Rita Rosenberg, published by Fisher Books, 1995.

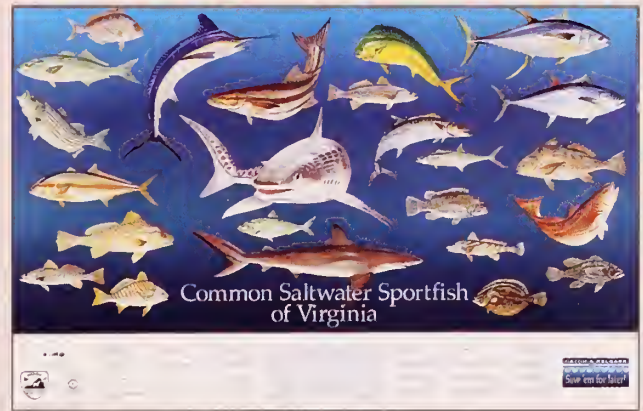
VIRGINIA WILDLIFE GIFT CATALOG

VIRGINIA WILDLIFE POSTERS



Just \$8 each. Specify:
freshwater game fish
(21" X 36"), wood duck,
barred owl, white-tailed deer
(all 19½" X 27½"),
saltwater fish (21¼" X
34").

Make check payable to:
Treasurer of Virginia and
send to: Virginia Wildlife
Poster Offer, VDGIF, P.O.
Box 11104, Richmond, VA
23230-1104.



VIRGINIA WILDLIFE CALENDAR 1995-1996

Only \$6.50 each. Featuring frameable world-class photography and useful information about the outdoors, hunting and fishing. This calendar runs from September 1995 through August 1996. Make checks payable to Treasurer of Virginia and send to: Calendar, VDGIF, P.O. Box 11104, Richmond, VA 23230-1104.

LICENSE PLATES



Now you can proudly display your support of the Virginia Department of Game and Inland Fisheries with our white-tailed deer, largemouth bass or mallard Wildlife Conservationist license plates. Available from the Department of Motor Vehicles (see gray card in this magazine). Sales proceeds will benefit VDGIF's efforts to conserve and manage fish and wildlife populations today—and tomorrow.

BOUND VOLUMES



Virginia Wildlife 1994. \$15.00. In one handsomely bound volume, you can have all 12 issues of *Virginia Wildlife* at your fingertips. A ready source of information and reference material for young and old.

Order from:
Virginia Wildlife, P.O. Box 11104, Richmond, VA 23230-1104. Make checks payable to:
Treasurer of Virginia.

PRINTS



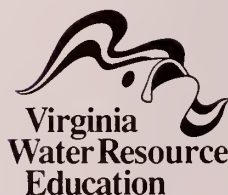
1995 Virginia Waterfowl Stamp Print by Richard Clifton. Snow geese flying over Back Bay. Overall size: 12" X 14".

For details and pricing information, contact your favorite art gallery or Sport'en Art in Sullivan, IL toll-free at 1-800-382-5723.



"Winter Comfort" by Bob Henley, a signed and numbered limited edition (950) print 13" X 19 1/2". \$45.00 each.

Make check payable to Treasurer of Virginia and send to "Winter Comfort" VDGIF, P.O. Box 11104, Richmond, VA 23230-1104.



ANGLER HOW-TO KITS

Beginning Angler or *Bass 'n Basics*. \$15 each. The perfect gift for the promising young angler, *Beginning Angler* includes a 30 minute video, an

18-page color identification guide of freshwater game fish, a full-color poster of Virginia's sport fish, a pocket field guide to fishing lakes and reservoirs, a coloring book, a bumper sticker, and more. *Bass 'n Basics* targets the intermediate angler seeking to learn more about the challenges of fishing for largemouth bass. Includes a 2-hour video, tips and techniques guide, full-color freshwater sportfish poster, boating information, and more. Order either kit from VDGIF, Aquatic Education Coordinator, P.O. Box 11104, Richmond, VA 23230-1104. Make checks payable to Treasurer of Virginia.

The Perfect Gift

*Need some help
this holiday season?
Don't want to
blow your budget?*



Order a year's subscription of Virginia Wildlife for only...

Bill Lea

Six Bucks!

*Y*our friends will get 12 issues of stunning wildlife photography and helpful, where-to-go and how-to information on hunting, fishing, wildlife management and boating opportunities in the state—information that can be found in no other publication!

*H*ere's a Made-In-Virginia gift that's sure to please every month, all year long!

*S*o, quick now, count up your friends (you'll need to order at least 10 subscriptions to qualify for this special offer) and fill in the gray card in this magazine.



Don't delay— Christmas isn't far away!

